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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,260	12/05/2003	Gunar Lorenz	CVZ-020	4703

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EXAMINER	
DINH, PAUL	
ART UNIT	**PAPER NUMBER**
2825	

DATE MAILED: 10/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/731,260	Applicant(s) LORENZ, GUNAR	
	Examiner Paul Dinh	**Art Unit** 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This FINAL office action is a response to the amendment + remarks filed on 10/3/06. Claims 1-57 are pending

Claim Objections

Claims 1 and 16 are objected to because "a Micro Electro-Mechanical Systems" should be changed to "a Micro Electro-Mechanical System". ("a" = singular and "systems" = plural)

Claims 1, 16, and 51 are objected to because the term "fully parameterized" is not clearly described in the specification and in the claims, particularly the term "fully" in "fully parameterized".

Claims 1, 16, and 51 are objected to because "mathematical theory" and mathematical behavior model" are unclear as to what math the applicant is referring to in this invention.

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 16-30 and 41-50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 (and its dependencies) are rejected because "said instructions" on lines 2-3 claims 16 lacks antecedent basis.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form The basis for the rejections under this section made in this Office action:
A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-57 are rejected under 35 U.S.C. 102(b) as being anticipated by the prior Art of record "AN ENVIRONMENT FOR DESIGN AND MODELING OF ELECTRO-MECHANICAL MICRO-SYSTEMS" (*Journal of Modeling and Simulation of Microsystems*, Vol. 1, No. 1, Pages 65-76, 1999)

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Microcosm Technologies, Inc., Cambridge, MA 02142.
N.R. Swart, and M. Mariappan,
Analog Devices, Inc., Cambridge, MA 02139.

(Claim 1 and similarly recited (similar/corresponding language) claims 16, 51)

Providing a model of a MEMS (*see* ***one or more of****: abstract, fig 1-3, 5-10, sections 1-5, 9-10*) displayed to a user (*see* ***one or more of****: MEMS CAD design environment, GUI/user in fig 2, sections 3-4*) in a schematic view (*see* ***one or more of****: abstract, fig 2-3,13,15 sections 2*-3, 10), said MEMS model including a plurality of fully parameterized model components based on analytical mathematical theory

(See fully parameterized model components based on analytical mathematical theory in ***one or more of*** *section 4.1 (polynomial curve-fitting, polynomial equations, dynamic equations, fig 5 (full 3D physic simulation), section 5.1 (mathematical expression of rotation expression), section 5.2 (system equations), section 5.4 (mathematical model for each individual components), section 5.4.2 (force equations), section 5.4.3 (Moment equations), section 5.4.4-5.4.6 (different order matrices, coupling coefficients, spatial derivative)section 6 (partial differential equations PDEs, Ordinary differential equations ODEs), etc;* ***fully parameterized*** *=* ***one or more of:*** section 2 *(each component in this library is parameterizable), parameterized cell (abstract, section 3), geometrical parameters for the components, width and length, physical parameters, mass, connectivity (section 3) physical dimensions or material parameters (section 4.2); mechanical tether (section 5.4.3), etc .) ;*

Generating a graphical 3D view of said MEMS model depicted by the schematic view for display to the user (*see* ***one or more of****: abstract, sections 1, 4.2, 7-10, fig 5-10, 12*);

Performing a simulation my numerically executing the MEMS model (*see MEMS simulation in* ***one or more of****: abstract, fig 2, section 1.1, 4.1, fig 5, 7-8, section 6-7, etc.)*, a result of the simulation being displayed in the 3D view so as to portray a mechanical motion of the MEMS (*the simulation being displayed in the 3D view so as to portray a mechanical motion*

of the MEMS disclosed in ***one or more*** *of fig 3 (mechanical schematic), section 4.1 (simulation data in dynamic equations of motion), fig 5 (translational, rotational, transformation a long 6 degrees of freedom and full 3D simulation) , fig 7, 10 (simulation with displacement/degrees of freedom motion/rotation , section 5.1 (3D translational degrees of freedom, 3D effective rotation, 3D axis of rotation),* and

Cross-referencing said 3D view and said schematic view so that changes in the 3D view are reflected in the model components depicted in the schematic view and changes in the model components depicted in the schematic view are reflected in the 3D view (*see* ***one or more*** *of: sections 1.1, 2, 4.2, 7-10, fig 2, 5-10, 13-15)*

(Claims 2, 17) wherein the 3D view displays one of a shape, orientation and position of said model (*one or more of* fig 5-10, 12)

(Claims 3, 18) wherein the displayed 3D view depicts a position of at least one mechanical connection point in said model, said mechanical connection point defined by at least one parameters of connected mechanical parts (*one or more of* fig 2-4, 6-10).

(Claims 4, 6, 19, 21) selecting a model component depicted in said schematic/3D (*one or more of fig 3, 5-10, 12-15*); indicating visually that a model component in said schematic/3D view has been selected (*one or more of fig 3, -10, 12-15*); and indicating visually a corresponding (model) component in said 3D/schematic view (*one or more of fig 3, 5-10, 12-15*).

(Claims 5, 7, 20, 22) wherein highlighting is used to indicate visually the selected model component in said 3D/schematic view and the corresponding model component in said 3D/schematic view (*one or more of* fig 2, 5-10).

(Claims 8, 23) analyzing programmatically said MEMS model (section 5-9); and indicating visually errors (sections 7-9) in said MEMS model on at least one model component displayed in said 3D graphical view (sections 7-9).

(Claims 9, 24) altering said 3D view in response to a user command (fig 2, 10 *sections 3-4*).

(Claims 10, 25) providing a 3D view generator associated with at least one model component depicted in said schematic view, said 3D view generator including information used

to programmatically generate a 3D view of a model component (*see one or more of: fig 2, 5-10, 13-15*); analyzing programmatically said MEMS model to identify model components associated with a 3D view generator (*see one or more of: fig 2, 5-10, 13-15*); and using at least one of said associated view generators to create a 3D representation of said model component in said 3D view (*see one or more of: fig 2, 5-10, 13-15*).

(Claims 11, 26) providing a symbolic view of the model depicted in said schematic that contains a list of component names (fig 2, sections 2-3, 9), said list arranged in a hierarchical order of model components and sub-components (fig 2, sections 2-3, 9).

(Claims 12-13, 27-28) synchronizing said symbolic view with at least one of the display of said schematic view and the 3D view such that a selection of a model component in said symbolic view is visually indicated in the symbolic view and at least one of the display of the schematic view and the 3D view (*one or more of* fig 2-3, 5, 7-10, 13, 15); such that a selection of a model component in at least one of the display of the schematic view and the 3D view is visually indicated in at least one of the display of the schematic view and the 3D view, and in the symbolic view (*one or more of* fig 2-3, 5, 7-10, 13, 15)

(Claims 14, 29) wherein at least some data for said model components displayed in said 3D view is retrieved from a netlist (fig 5, section 2, 4.2)

(Claims 15, 30) wherein the plurality of model components in the MEMS model are selected from a MEMS component library (fig 2, section 2-3).

(Claims 31, 41) the displayed resulted of said simulation are progressively altered to reflect the simulation results during different points in said simulation (see one or more of: sections 1.1, 4.2, 7, fig 5, 7-8).

(Claims 32-42) wherein said system model includes at least one optical component (Sections 7-8)

(Claims 33-34, 43-44) said MEMS model includes at least one mechanical structure (one or more of section 1, 3-4, fig 3-4, 6-8, 10, 12-13); wherein the simulation of said mechanical structure involves at least one of displacements, mode shapes and distortion of the mechanical structure (fig 7-8, 10, 12-13).

(Claims 35, 45) wherein MEMS system model includes at least one connection between mechanical components, said connection representing mechanical degrees of freedom of the

connected mechanical components (see one or more of: sections 4-8, fig 7, 12, 14, 16, tables 1-3).

(Claims 36-37, 46-47) wherein said simulation results are animated in said 3D view (*see one or more of: abstract, sections 1.1, 4.2, 7-10, fig 5-10, 12*); wherein at least one of the speed and viewing characteristics of the 3D view of the simulation results of said simulation is controlled by user-set parameters (section 3-4);

(Claims 38, 48, 55-56) a simulator able to simulate the execution of the system model depicted in said 3D view (sections 1, 4, 6-7 fig 2, 4-5); and a simulation result visualizer used to display simulation results generated by said simulator to said user by altering the display of said 3D view of said model by altering the appearance of said 3D view to reflect different points in said simulation (sections 1, 4, 6-7 fig 2, 4-5); wherein said simulator (or simulation) is **one of** a circuit simulator and signal flow simulator (one or more of: sections 1, 4, 6-7 fig 2, 4).

(Claims 39, 49) instructions for associating a 3D view generator with a model component referenced by said MEMS model (section 1, 3-4); instructions for analyzing programmatically said MEMS model to identify model components associated with a 3D view generator (section 1, 3-4); and instructions for using said 3D view generator to generate the display of the simulation results (section 1, 3-4).

(Claims 40, 50) wherein the different points in said simulation at which the simulation results are displayed represent at least one of a time increment, one of a series of frequencies, and one of a value in a series of model parameter values (section 1, 4, 6).

(Claims 52-54) further comprising at least two views of said MEMS model (section 1, 4-5, 7), said 3D view of said model and a symbolic view providing a hierarchical listing of components and sub-components in said MEMS model (section 4, fig 2) wherein at least two of said views are cross-referenced such that the selection of a component in one view causes the indication of the selection of the corresponding component in one of said other views (section 1, 4-5, 7); wherein the view characteristics of said 3D view of said model are configurable by a user (section 3-4).

(Claim 57) wherein the display of said simulation results to a user is configurable by a user to adjust at least one display characteristic of the simulation results (sections 3-4).

2. Claim 1 and similarly recited (similar/corresponding language) claims 16, 51 are rejected under 35 U.S.C. 102(b) as being anticipated by the prior Art of record "Model Library and Toll Support for MEMS simulation" by Peter Schwarz and Peter Schneider, Conference on "MICROELECTRONIC and MEMS Technology", Edinburgh, Scotland, SPIE Proceedings Series volume 4407, pages 1-14, 2001

Providing a model of a MEMS (one or more of: abstract, fig 1, 4-10, 12-13) displayed to a user (*GUI fig 11*) in a schematic view (*see one or more of: fig 1-3, 5-14*), said MEMS model including a plurality of fully parameterized model components based on analytical mathematical theory (one or more of: fig 1, 4, 6, 10-11, 13)

Generating a graphical 3D view (one or more of: fig 1, 3, 5, 8, 10-11, 14) of said MEMS model depicted by the schematic view for display to the user (*GUI in fig 11*);

Performing a simulation my numerically executing the MEMS model (one or more of fig 1, 4-11, 12-14*)*, a result of the simulation being displayed in the 3D view so as to portray a mechanical motion of the MEMS (see mechanical translation, rotation, displacement, motion in i.e., sections 2-3, fig 12*)*, and

Cross-referencing said 3D view and said schematic view so that changes in the 3D view are reflected in the model components depicted in the schematic view and changes in the model components depicted in the schematic view are reflected in the 3D view (*see **one or more** of: fig 1, 3, 5, 8, 10-11, 14)*

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Dinh whose telephone number is 571-272-1890. If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Jack Chiang can be reached on 571-272-7483. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Paul Dinh
Primary Examiner

Paul Dinh